

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

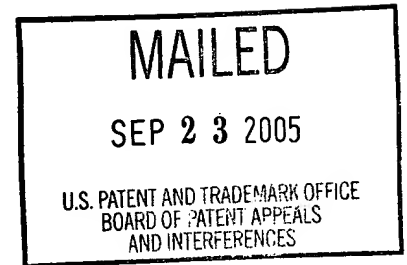
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROSHI NIWA, HIDEFUMI YAMASHITA,
TATSUSHI KOIKE and YOSHIAKI OHBAYASHI

Appeal No. 2005-2287
Application No. 09/767,588

ON BRIEF



Before KRASS, BLANKENSHIP and MACDONALD, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

Decision On Appeal

This is a decision on appeal from the final rejection of claims 1-3, 5, 6, 8-11, and 16-21.

The invention pertains to liquid crystal displays. In particular, a sealing material seals the peripheral portion between two substrates and an end-sealing material seals an injection hole in the sealing material for receiving liquid crystal.

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Representative independent claim 1 is reproduced as follows:

1. A liquid crystal display having a first substrate and a second substrate which are disposed with a predetermined gap therebetween, in which liquid crystal is sealed in said gap, comprising:

post structures for controlling the gap between said first substrate and said second substrate;

a sealing material provided outside a display area for sealing said liquid crystal in said gap, and forming an open injection hole for injecting said liquid crystal therethrough;

an end-sealing material for sealing said injection hole after said liquid crystal is sealed in; and

injection hole post structures provided in an area near said injection hole, for dividing said injection hole into a plurality of portions by using the same material as said post structures, wherein said injection hole post structures are formed from a material which deteriorates a charge retention of said liquid crystal less than said sealing material.

The examiner relies on the following references:

Nakanowatari	4,820,025	Apr. 11, 1989
Ohashi et al. (Ohashi)	5,798,813	Aug. 25, 1998
Saito et al. (Saito)	6,304,308	Oct. 16, 2001
		(filed Aug. 9, 1999)

Claims 1, 9, 17, 20, and 21 stand rejected under 35 U.S.C. § 102(e) as anticipated by Saito.

Claims 2, 3, 5, 6, 8, 10, 11, 16, 18, and 19 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner offers Saito with regard to claims 3, 5, 10, and 11, adding

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Ohashi with regard to claims 2 and 16, but adding Nakanowatari to Saito with regard to claims 6, 8, 18, and 19.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

A rejection for anticipation under section 102 requires that the four corners of a single prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation. In re Paulsen, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

The examiner contends that claims 1, 9, 17, 20, and 21 are anticipated by Saito by the disclosure of a first substrate DSUB, a second substrate USUB, liquid crystal LC sealed in a gap between the substrates, a sealing material SL provided outside the display area for sealing the LC in the gap and forming an open injection hole INJ, post structures SPC-P for controlling the gap, and an end sealing material SL for sealing the injection hole INJ after the LC is sealed in.

Appellants argue that Saito fails to teach or suggest the claimed "sealing material provided outside a display area for sealing said liquid crystal in said gap, and forming an open

injunction hole for injecting said liquid crystal therethrough.” In particular, appellants contend that Saito discloses a strip spacer SPC-S having an injection port and that this strip spacer does not perform the claimed sealing function because Saito teaches, at column 8, lines 15-24, that the liquid crystal overflows and extrudes out of the strip spacer. Therefore, contend appellants, the strip spacer is not a seal material, the strip spacer and cell gap being sealed only when the seal material SL is deposited around the strip spacer (referring to column 8, lines 63-65). Moreover, contend appellants, Saito does not disclose that the seal material SL comprises an injection port, and that, in fact, the seal material SL in Saito is deposited after the liquid crystal injection, sealing the injection hole in the strip spacer.

We have reviewed the evidence of record, including the arguments of appellants and the examiner, and we agree with the examiner that, commensurate with the scope of the claims, Saito anticipates the instant claimed subject matter.

Appellants' argument focuses on Saito's strip spacer not being a "sealing material." However, as explained by Saito, at column 7, lines 1-5, a "chosen seal material" coats the outer edges of the strip spacer, then irradiating ultraviolet rays are

used for effecting half-hardening of the strip spacer/seal material, and liquid crystal material is injected from the opening. Therefore, from this explanation in column 7 of Saito, it appears that, contrary to appellants' argument, there is an injection hole present after application of a seal material and liquid crystal is injected, or deposited, through that injection hole after providing the sealing material but before applying the end-sealing material.

Appellants point to column 8, lines 15-24, of Saito, for the proposition that the seal material is deposited around the cell gap and the strip spacer and that the liquid crystal has already been injected when the seal material SL is deposited. While it is true that seal material is applied to seal in the gap and the liquid crystal material, this disclosure at column 8 of Saito is an additional step. It does not contradict the disclosure of a previous step, at the top of column 7, wherein the seal material is also first placed on the outer edges of the strip spacer, and that liquid crystal is injected through the injection hole after this step. Additional seal material is applied, as disclosed in column 8, for sealing in the liquid crystal, but the language of the instant claims is still met by the disclosure of Saito.

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Accordingly, we will sustain the rejection of claims 1, 9, 17, 20, and 21 under 35 U.S.C. § 102(e).

With regard to the rejection of claims 6, 8, 18, and 19 under 35 U.S.C. § 103, appellants contend that the combination of Saito and Nakanowatari does not teach or suggest "sealing material has a projecting portion formed by bending said sealing material at an acute angle when said injection hole is formed." Appellants specifically point to Figures 2 and 8 of Saito to show that the injection hole is of rectangular shape, formed by the strip spacer SPC-S, and that the seal material simply conforms around the rectangular shape of the strip spacer, but that no portion of the strip spacer in Saito is bent at an acute angle, as claimed.

Appellants note that Nakanowatari shows, in Figure 3, and column 3, lines 7-10, that one part of a sealing member 3 is opened to constitute an injection hole 5, but that Nakanowatari does not teach or suggest that a "sealing material has a projecting portion formed by bending said sealing material at an acute angle when said injection hole is formed." In particular, note appellants, the sealing member 3 of Nakanowatari forming the injection hole is bent at an angle greater than 90 degrees, obtuse, rather than acute, as claimed.

Accordingly, in appellants opinion, the combination of Saito and Nakanowatari cannot suggest the subject matter of instant claim 6.

The examiner recognized that Saito lacks a teaching or suggestion of bending the seal material at an acute angle to form an injection hole, but relied on Nakanowatari's Figure 3 to show the sealing material bent at an angle to form an injection hole. It is the examiner's contention that the hole in Nakanowatari is formed by cutting away the seal material at an acute angle, viewed as the "outside angle" (answer-page 8). Therefore, concludes the examiner, "the seal material that seals the injection port is also formed at an acute angle" (answer-page 8).

The examiner found that it would have been obvious "to adapt the specific sealing configuration that is cut at an acute angle to enable the injection hole to come close to the bottom of the tank of the liquid crystal, thereby enabling effective use of an expensive liquid crystal (col. 2, lines 12-26)" (answer-page 8).

Independent claim 6 calls for "bending said sealing material at an acute angle when said injection hole is formed." It does not mention what "acute" is relative to. Whenever an obtuse angle is formed, there is also an acute angle formed because the two angles are supplementary. Since there is nothing to relate

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the "acute" angle to in the claim, and the examiner appears correct in contending that the "outside" angle of the sealing material in Nakanowatari is, indeed, "acute" even if, as appellants contend, the inside angle is greater than 90 degrees, we agree that the claimed "acute angle" is taught by Nakanowatari. Therefore, appellants' argument that the references do not teach bending the sealing material at an acute angle is not persuasive.

Since appellants offer no argument against the propriety of making the combination of Saito and Nakanowatari, we accept the examiner's reasoning and we sustain the rejection of claim 6, as well as claims 8, 18, and 19, under 35 U.S.C. § 103.

Since appellants make no separate, additional arguments against any other claim, we will also sustain the rejections of claims 2, 3, 5, 10, 11, and 16 under 35 U.S.C. § 103.

Accordingly, the examiner's decision rejecting claims 1, 9, 17, 20, and 21 under 35 U.S.C. § 102(e) and claims 2, 3, 5, 6, 8, 10, 11, 16, 18, and 19 under 35 U.S.C. § 103 is affirmed.

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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 C.F.R.
§ 1.136(a)(1)(iv).

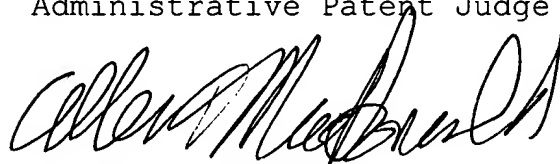
AFFIRMED



ERROL A. KRASS)
Administrative Patent Judge)



HOWARD B. BLANKENSHIP)
Administrative Patent Judge)



ALLEN R. MACDONALD)
Administrative Patent Judge)

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